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ARCHITECTURE OF THE CALIFORNIA MISSIONS.

BY REXFORD NEWCOMB.

In studying the sources of design in architecture, it is seldom given to us of America, to examine the originals without crossing the water. And among the limited sources within our own boundaries, there is no class of buildings more interesting than the old missions here in our midst. So many elements combine themselves in these buildings that the architect of the Southwest can find among them precedent for the design of a church, a residence, a workshop or if he desires, all of these well connected and charmingly related. For it must be understood that the mission establishment provided every desire, luxury as well as necessity for these early pioneers and the Indians whom they came to Christianize.

California is not the only home of the Franciscan missions; the missions of this order are to be found in Texas, New Mexico and Arizona as well as in California. Those of Texas, New Mexico and Arizona, being closer to old Mexico and hence easier of access, naturally resembled the Mexican churches of the time, which were built in a bad period of the Spanish Renaissance. Fortunately it was hard to get artisans and artists to come to Alta California and so the priests and Indians with humble materials and unskilled hands were compelled to build simply. And in meeting squarely and frankly their problem as they saw it, they were able to create a style, which for the country in which it was developed, has not been surpassed.

The geographical distribution of the missions in California ranges from San Diego on the south to San Francisco Solano on the north, taking in, roughly speaking, about two-thirds of the length of the state. There were in all twenty-one missions proper, with several *assistencias*, the presidio church at Monterey and the plaza church in this city. In no case were the missions any great distance from the sea coast, Soledad, San Fernando and San Gabriel being as far inland as any.

The construction of the earliest mission buildings was of wooden posts of pine or cypress set close together and plastered inside and out with clay. This was the method at San Carlos. They were roofed with earth and built around a quadrangle, which plan came to be the standard layout for the typical mission establishment.

This mode of construction was employed until 1780, except of course where wood was scarce, as at San Diego, at which place adobe, or sundried brick, were used. In 1780 the adobe brick, a material widely accessible and entirely non-combustible, came into general use, and in 1783 San Diego is said to have had two priest houses, a church, a guard-house, infirmary, nunnery, store-house, granary, wood-house, larder and kitchen, the whole forming the three sides of a quadrangle, the fourth side of which was protected by an adobe wall nine feet high.

It was soon apparent, however, that the adobe walls were not protected enough by an earth roof to insure permanence and the roofs made of reeds, in the fashion of the Indians were so inflammable that about 1790 the priests began to make tiles for roofing purposes. In 1793 stone began to be used as a material for walls at Santa Cruz, and at Capistrano, in 1797, the magnificent, seven-domed church was begun in cut stone. Eventually burned brick and tiles for floors and roofing were used throughout the coast.

The materials used in the construction of the mission buildings were: adobe, boulders, sand-stone, lime-stone, woods of various kinds, burned tiles and bricks, mortar, iron, raw-hide and tule or cat-tail stems. The boulders were, where used, generally employed as foundations for the adobe walls. This was the case at Capistrano, Pala chapel and other places. The adobe bricks and blocks were used in various ways, the ordinary method resembling our modern brick work, the sun-dried adobes being laid up in a wall with wet mud as an adhesive. Walls of this kind are to be found throughout California and when kept dry and protected stand for years in perfect condition. An interesting and ingenious method of wall construction is to be found at San Luis Rey, or could be seen previous to the recent restoration. It consisted of laying up blocks of adobe 6 x 6 inches to 8 x 8 inches square and 12 to 18 inches long, with a thick mortar course of concrete, made from lime and sand mortar and aggregates of small gravel, brickbats and pieces of burned tiles. These were laid and were then covered with stucco.

An interesting combination of materials is used at Capistrano, where the skew-backs and key-stones for the arches are of stone, while the voussoirs themselves are of burned brick, supported on brick piers. In several places the adobe walls are faced with burned brick. At San Luis Rey this scheme obtains, especially upon the facade of the church and the cemetery wall. Frequently lintels of stone are to be found in brick and adobe walls, while at Capistrano the great church and the sacristy were of solid stone, as were the towers and stairs at Carmel, parts of San Gabriel, Santa Barbara and many other places. In most cases the stone used was that locally

found and I find no records of materials having been transported any great distance.

The making of tiles for roofs and floors seems to have been an accomplishment of the padres, as the roofing tiles, and the floor tiles as well, are largely intact today where they have been left alone by the Americans. There were various types of flat tiles, those being used for wall facing, piers and arches being oblong in shape, while the floor tiles were square and diamond shaped. They were all thin compared with the modern brick, being $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in thickness. The padres displayed a marked originality in combining these simple tiles, the charming chimneys at Capistrano and the latticed parapet above the corridors at San Luis Rey standing as worthy monuments to their skill. A better use of the materials at hand has been made nowhere than at San Luis Rey, due, no doubt, to the fact that the mission was built comparatively late in the mission period. The facade of the church and the cemetery wall, which parts furnish the chief interest of the group today, are admirable examples of brickwork and it is a pity that the masonry is covered with stucco. The facade, we may be sure, was designed in advance by a practiced hand, as all of the features—mouldings, niches, corbels and bands—are of brickwork, moulded for the particular situations in which they were placed. Upon first observation, I thought it would be possible to show that the various pilasters, moulds, bases and corbels were made up of a comparatively small number of type forms, laid up in various combinations, but upon further investigation, I found that this would be impossible to prove. The only other conclusion, then, is that each feature was designed beforehand and destined for the place it occupies.

An ingenious use of the arch is to be found at Capistrano, two examples of the same usage being found there, one at the northeast corner of the cloisters in the patio and one in what is now the sacristy of the church. The primitive builder has made the one arch do the work of two arches and to all intents and purposes it does its work well. The scheme is to place an arch at an angle of 45 degrees at the corners of the cloister, where the ordinary usage is to place an arch over the cloister each way. I know of no accepted term that would characterize this use, unless it could be called an "auxiliary arch" in the sense that it reinforces the others.

Various kinds of wood were used in the old missions, depending upon the location of the buildings and their surrounding supply. Sycamore was widely used at Capistrano and it has served its purpose well. I recently observed a workman, in making repairs at Capistrano, cut one of the original timbers in two. On the surface the wood appeared worm eaten and rotted, but the heart seemed as solid as it was a century ago. The padres took little trouble to

square the timbers used in the buildings, due to the fact that they had few if any saw-mills. Timbers, however, used in prominent or exposed positions were roughly hewn into shape.

The padres evidently knew very little of the principles of truss building and roof construction. This will perhaps account for the narrowness of their churches. They were usually satisfied with the small span that could be roofed by a simple beaming process such as was used in Father Serra's church at Capistrano, at San Luis Rey, San Gabriel, Dolores and other places. Where trusses were used they were usually illy constructed, as was the case at Pala chapel, where the tension members having been omitted, it was necessary to introduce a post at the centre of the span to prevent failure. The tension members have been supplied in recent years and the posts removed, greatly improving the interior appearance of the church. An interesting system of roof construction was used at Carmel, where the roof was originally carried on stone arches which spanned the nave.

The padres had little iron for their work and consequently most of the structural members of any size had to be held together with raw-hide thongs. In the construction of ceilings to be plastered, the rawhide proved the only solution in the absence of an abundance of nails. The lathes used, upon which to apply the plaster, were the stems of the cat-tail so abundant in the marshes. They were bound together into fabric by means of interlacing raw-hide strings and laid on top of the ceiling joists to which they were secured by means of raw-hide ties. The lower side was then plastered with lime and sand plaster. Iron was used for rails, hinges, locks, nails, bolts, ties and window bars. There are various interesting rails among the old missions, a simple yet well designed example being the rail to the choir loft in the old Serra church at Capistrano. A very interesting series of window bars is to be seen today on the principal building San Fernando.

The artisans were few in number. San Carlos was built by four Indians and as many sailors. San Diego (second structure) was undertaken by neophytes and twenty sailors, while the greater number of edifices were reared by Indian workmen directed by the priests themselves. Borica, governor of Alta California, brought at one time six masons, two carpenters, and three blacksmiths from Mexico to serve at the missions, but within five years every one had returned to the older province, so that when the church at San Juan Capistrano was to be built, it was necessary to import a master-mason from Culiacan to superintend the stone-work.

The architects or designers of the missions were, as a usual thing, the priests themselves. In some cases the name of the designer is known: thus we are indebted to Father Antonio Peyri for the de-

sign of San Luis Rey and to Joseph de Jesus for the design for Santa Clara. In view of the fact that these buildings were designed in most cases by laymen, it seems wonderful that such charming results should have been obtained.

Before discussing the features of the style it will be necessary to investigate the purpose for which the buildings were erected. The education of the Indian was of two kinds; namely, training in the various crafts, like tanning, shoe-making, harness-making, weaving, hat-making, blacksmithing, carpentry, grain, fruit and cattle raising; and the book learning, such as the Spanish language, Christian doctrine and singing. Only two priests were in charge at any one time. They lived in the mission together with the servants and workmen, while the great body of the Indians lived in the small houses in the pueblo. The system required first of all, a church, then priests' quarters, shops for the craftsmen, quarters for the workmen and servants, guest rooms, store houses, etc.

The priests must have supervision and access at all times and the establishment must be protected from attack from without. Hence, the arrangement around a court or patio seemed the solution. This is the plan of practically all of the mission establishments that had any pretentious plan at all.

The style is characterized by the following features, two of which being original, at least in use, are sufficient to establish the style as separate and distinct from any other in the world.

(1) Solid and massive walls, piers and buttresses. All of the buildings show these characteristics.

(2) Arched corridors. These are found at Capistrano, San Luis Rey, San Fernando, Santa Barbara, San Antonio, Santa Ynez, San Juan Bautista and San Miguel.

(3) Curved pedimented gables. San Luis Rey, San Gabriel, San Antonio, San Diego.

(4) Terraced bell towers with lantern. San Luis Rey, Santa Barbara, Capistrano and San Buena Ventura.

(5) Pierced Campanile (wall or tower). San Gabriel, San Antonio, Santa Ynez, Pala Chapel, Capistrano.

(6) Patio with fountain or garden. Practically all of the missions were laid out around a patio or one was eventually projected. The best examples are, San Luis Rey, Santa Barbara, San Buena Ventura, San Juan Capistrano.

(7) Broad undecorated wall surfaces. All buildings.

(8) Wide projecting eaves. All buildings.

(9) Low sloping red tile roofs. All buildings.

Some of these features are directly traceable to European precedents, and in this connection it is interesting to trace them back to their European antecedents. In the tracing of any style of

architecture, it is always necessary to examine its beginnings thoroughly. Heredity counts for a great deal in the evolution of an art epoch. The mission style of California, perhaps more than any isolated modern style, has a long line of ancestry influencing it. It must not be thought, however, that each element of the mission style can be traced directly to its European antecedents. The influence of the country,—the geography, the topography, the climate,—has played a larger part in its development than has its ancestry. The style is above all Californian; it is her sloping hills, her beaches, her mountains, her sunshine. But let us turn for a moment to a discussion of the European antecedents of the style. In order to do this, it will be necessary first to consider the architecture of Spain, to trace its influence in the new world, in Mexico, Texas and Arizona, and to discover the relation of the mission architecture of California to the ecclesiastical work of Mexico.

From the earliest times, the Iberian peninsula has been subject to invasion by on-coming civilizations from the east. The original inhabitants, the Iberians, were conquered by the Romans, the Romans by the Visi-Goths, the Visi-Goths by the Moors and the Moors in turn by the combined forces that they had driven northward in their advance. Thus we see that Spain has been overrun with civilizations of various origins, institutions and standards. Each contributed to that cosmopolitan civilization which we have for years known as Spanish.

It is possible to classify the monuments of Spain according to the successive invasions. Thus in Spain we see Roman art, Visi-Gothic art, and Saracenic or Moorish art and after the Christian domination the art that resulted from an assimilation of all these preceding elements. Iberian art prevailed before 206 B. C., Roman from 206 B. C. to 417 A. D., Visi-Gothic from 417 to 711 A. D., Moorish from 711 to 1492, and Spanish from 1492 to the present time. The ancient Iberian architecture is represented in the cyclopean walls that appear in various parts of Spain, as at Gerona and Tarragona. These attempts were upon a parallel with those masonry constructions of the early Pelasgians in Greece and the Etruscans of Italy.

The Visi-Goths were primarily a race of warriors, and they held the arts of civilization in contempt. They adopted Roman culture and appropriated Roman luxuries and refinement, but failed to create anew to fit their needs or wishes. Thus we see that in matters of art and architecture they contributed little if any to the sum total of progress in the peninsula. Roman influence, on the other hand, must not be underestimated. Roman culture serves as the whole basis of subsequent institutions and Roman art was the basis of Spanish art. The arch and pier system of construction, the use of

conglomerate walls, the use of the round arch and classic details are striking evidences of Roman domination and serve to give Spanish architecture its whole Romantic basis.

It was the transplanted handiwork of French architecture, executed by French workmen to please French queens. The style lasted through the twelfth century, but gave way to the Gothic, which flourished under Ferdinand and Isabella, and was called in Spain the "Gothic of the Catholic Kings." The style was in no sense Spanish. It was adopted from the north as had been the shortlived Romanesque.

The architecture of the Iberian peninsula received no greater impress than that left upon it by the Moors. Coming into the country in 710 and holding ground in Spain for upward of 800 years, their influence upon the architecture and arts of the country is of undoubted magnitude. The evidence of their work is to be seen in their strongholds in the south of Spain, but their influence reached at places far into the north, due, no doubt, to the superior education and ability of the Moorish workmen. The influence of the Moors is to be traced in practically every style of Spain subsequent to their appearance in the peninsula and it is to their influence that tinge of orientalism so characteristic of the later school came into vogue.

The Moors were in no sense constructors. They were great decorators, consequently they appropriated the constructive principles of the people they subjugated. They came into Spain bringing with them a cosmopolitan architecture and finding the Roman and Visi-Gothic remains, grafted their art upon what they found. The result is the Mohammedan style of Spain, technically called the Moorish or Moresque.

Not only did the Moors appropriate the classic constructive principles in their work, but they also used the Gothic. As a result we get combinations such as the doorway in the House of Abia at Valencia. The mixture of Gothic and Moorish we call Gothic-Moresque.

Gothic architecture was introduced into Spain from France shortly after the campaigns of 1217-52, which marked the beginning of the downfall of the Moorish dominion. The spirit of exultation brought about by the victorious campaigns and the accession of wealth fostered a rapid development of architecture. French Gothic was at the time at its highest point. The cathedrals of Toledo and Burgos were begun at the time and were nearly pure French Gothic. Toledo was in imitation of Notre Dame. There was a tendency to over-decoration, due to the oriental influence of Moorish decorative ideas. The style became more and more decorative and less and less constructive until it reached that depth of degradation from which the architecture of Spain never recovered. The arcades of the patios

were formed of arches of fanciful shapes resting on twisted columns while the walls were covered with minute carving or exquisite workmanship but wholly irrational design. San Gregorio at Valladolid is an example of this period. The requirements of the luxurious and triumphant period that followed the discovery of the new world, but due to the importation and employment of Dutch and Flemish artists, the Renaissance style was introduced during this prosperous period. The importation of precious metals from the new world gave the arts of jewelry and silversmithing a new impulse which dominated all the other arts. The buildings took on an over ornate appearance, due to the minute, detailed and sumptuous decoration and hence it is usually referred to as Plateresque (i. e., from *platero*—silversmith). The classic elements of Italy imported *via* the low countries were mixed indiscriminately with Gothic-Moresque details, and the style is characterized by surface decoration covering broad areas, elaboration of openings, decorative pilasters, broken pediments and entablatures. The early Renaissance, or Plateresque, lasted from 1500 to 1556, and was followed by a reaction led by Herrera, who proposed to return to classic purity. How well Herrera succeeded may be judged by his Escorial. This reaction lasted until 1650, when it was followed by that most outlandish of all the Renaissance styles, the Churrigueresque. This style admittedly disregarded all architectural canons and plunged into a style of unrestrained fancy and debased taste. It prevailed until the coming of the Italian designers in the latter half of the 18th century, resulted in a second step toward classical purity and correctness.

Such is the ancestry of the style of architecture that was introduced into America with the coming of the Spaniards into Mexico. Spain possesses no pure style such as are encountered in other countries. Her architecture like her people is cosmopolitan. Nevertheless there are certain claims which Spanish architecture has upon the attention of the world and there is a certain charm to it which speaks, after all, of the land where it developed. In so far it is national and hence has many admirers.

When the Spaniards came into Mexico they began to build in the fashion of their native home. Prescott relates that the pagan city of Mexico was destroyed and that a new city was built upon its site. The Spaniards appropriated little if any of the ancient Mexican architecture. Professor Hamlin of Columbia says, "Some extreme examples of this style (i. e., Churrigueresque) are to be found in the Spanish-American churches of the seventeenth and eighteenth centuries as at Chihuahua and many other cities in Mexico, at Tucson (Arizona) and other places. The least offensive feature of the churches of this period were the towers, usually in pairs at the west end, some of them showing excellent proportions in spite

of their abominable details." Thus we have an estimate of the Spanish ecclesiastical work of the time. The churches of Mexico were designed as nearly in imitation of Spanish churches as their designers could make them. The attempt ended often in a horrid hodge-podge of Rococco ornamentation. Among the most satisfactory of the Mexican examples is the Cathedral in the City of Mexico.

The Texan and Arizona churches being in lands more or less accessible from Mexico were built largely in the same fashion. In them we find the same attempt at magnificence and grandeur, the same over-decorated and the same bare walls. They have a certain oriental atmosphere due to the use of domes, and a visit to San Xavier del Bac is like a trip into some enchanted land of the Moslems, so oriental is the architecture. Certain influences of the Gothic are to be noted in the pointed arches of San Jose Mission near San Antonio, Texas. The Texan and Arizonan churches are much more elaborate both in outline and decoration than any of the California churches. Therein, perhaps, lies the chief charm of the Franciscan edifices of California—simplicity and straightforwardness.

California was comparatively inaccessible and it is fortunate that it was so, else we might have had a poorer architecture in California. Of course, the style is Spanish in general feeling, but there is also that in it which makes it truly and purely a product of this land, of this climate.

The arched corridors or arcades are not, as often found in Europe, a series of arches supported upon columns but are formed of arches supported on square piers. No exception to this rule is to be found in California. The feature is Romantic, round, rythmic and suggests the arches of the Roman aqueducts found in Spain to this day. In the ruined state without roofs as they are found at San Juan Capistrano, the Roman aqueducts are immediately recalled to the beholder. Some writers say that elliptical arches were used. They were not used deliberately. With poor tools and poor workmen the pure circular curve one expects developed into an approximate ellipse, especially when an arch span was greater than others in the series.

The curved pedimented gables are a distinct and unique feature of the style. Similar details are found in Texas and Arizona, but the feature has no exact precedent in Spain. Curved gable ends are found in the German and Flemish cities, so that perhaps the germ of this detail came to Mexico through Spain from Germany or the low countries. Out of it was developed a feature that was absolutely different from any of its precedents. The curved pediment is beautiful in its simplicity and serves to supply a large part of our

interest in the mission style. It was more used in California than elsewhere in America.

The terraced bell tower is a feature found in many of the churches found in the United States, but the variety used in California is peculiar to California and resembles in no sense the towers used in the states to the east of us. The three examples at Santa Barbara, San Luis Rey and San Buena Ventura are distinctly Roman in feeling. This is not the case with a tower such as is found at Carmel, which by virtue of its egg-shaped dome has a peculiar oriental flavor.

The pierced campaniles are original and unique in design, but not in idea. Other examples of a similar nature or usage are to be found in Mexico and Texas. The belfry at Capistrano built after the great church was demolished by the earthquake of 1812 serves the double purpose of a wall and a belfry and is unique in this respect. The free standing campanile at Pala chapel is perhaps the only example of that usage in the world. The variety at San Gabriel is well known to every Californian and is a beautiful and interesting detail.

The patio is an old Spanish feature and is not original at all as a feature of mission architecture. It is found as well in the private dwellings in most of the Mediterranean countries and dates back to the earliest times in warm countries. Its use in California nevertheless has been varied and unique in many respects. At Capistrano and San Luis Rey the patio is one of the most interesting parts. At Capistrano the patio has no two sides of the same length. This will be noted from the plan. It was probably due to the fact that the padre in charge stepped off the distances between the piers and places sixteen arches on a side regardless of span. It would seem that the builders came out a little short at the southeast corner, as one of the spans there is strikingly short. The sides of the patio at Capistrano approximate 200 feet each. There are three openings into the patio, one on the north one on the south called the "Zaguan," meaning vestibule and the gate near the southwest corner. When the mission was at its height the patio presented, no doubt, an appearance ever of vari-colored activity. As will be noted, the patio was surrounded on all sides by the buildings themselves, so that in times of danger all hands might be gathered into the patio and the guard mustered for action. That the layout was admirably adapted to the needs of such a community I think all will agree. The only objection, it would seem, was that the church at Capistrano was detached from the patio, but as this same scheme was employed at San Luis Rey, it would seem that the padres considered it necessary to have the worshipping place a little way removed from the busy centre of the work-a-day life.

The broad, undecorated wall faces are a feature of practically all of the missions north of Mexico and of the churches in Mexico, except the west front and the space around the openings. This idea has its precedent in the Moorish practice of lavishing the decoration upon the interior and leaving the exterior walls blank and bare. In this respect the Saracenic of Spain differs from the Saracenic of Persia, Egypt, Turkey or India.

The wide spreading eaves are a feature of the California style and come about as a direct effect of the climate. The intense sunshine requires a wide spreading eave. This feature is not found in Texas or Mexico. The low sloping roofs are likewise not a feature of the Mexican, Texan or Arizonan and may be attributed likewise to the climate of California. They are a feature of the domestic architecture in Spain, however.